

# ASHRAE RESEARCH PROJECT ANALYSIS

(Completed by Staff January 2002)

Project Number & Title: 1212-TRP, Airflow Measurement Of Biological Safety Cabinets (BSC)

Responsible TC/TG: TC 9.10, Laboratory Systems

Justification of Need: At present, NSF is the only recognized authority for the certification of Class II BSCs. Their standard is NSF International Standard #49. The current standard is limited only to the construction of the BSC and the testing by the manufacturer both at the manufacturer's site and at NSF. Down flow air is tested in the same manner in the field as at the manufacturer's site and at NSF.

Inflow air measurements and exhaust air measurements are the largest issues of controversy. Inflow air measurements using a thermal anemometer are extremely difficult to measure with any real accuracy and to verify on a repeatable basis. Air that enters the work opening is immediately directed down so as to not contaminate the product being worked on in the cabinet. As such, any flow that happens to be entering perpendicular to the work opening is redirected 90 degrees. All other flows entering the work opening have vectors that make placement of a measurement device extremely difficult or impossible. Yet, airflow through the work opening is specified for each cabinet in calculated average linear feet per minute. These flows are reported by the manufacturer of the BSC and NSF.

This difference between methodologies is common among all of the BSC manufacturers and across various models and sizes. What is missing is to determine which number is correct, if indeed either of them is correct. This confusion of flow differences from the inflow to the exhaust has frustrated BSC certification companies, air balance companies, mechanical contractors, and the building owners. For BSCs that are not connected to the building ventilation system, the point is moot. However, when connected to the building system, this difference can mean changing out a complete ventilation system to accommodate balancing the volume of air being brought into the laboratory and being exhausted to the outside.

Work Statement Authors: Frank Spevak

Category: IAQ, Comfort & Health

Classification: Basic Applied Research

RTAR Submitted:  
(year) 2002-03

Position on TC/TC Research Plan:  
#1

Position on ASHRAE Research Plan:  
Accepted

Coordinated with TC:

Relates to Previous Project:

Vote of TC/TG:

Vote of RAC:

Vote of RAS:

Vote of Tech Council:

Allocation of ASHRAE Funds Per Fiscal Year

<u>2001-2002</u>	<u>2002-2003</u>	<u>2003-2004</u>
\$47,500	\$47,500	\$

Other Information (such as comments from TC/TG or RAC, Justification of low bidders not being recommended, practical application of results, reason for negative votes, etc.)

<u>ESTIMATED</u>	<u>9M</u>	<u>\$100,000</u>	<u>SCORE</u>
Micro-Clean, Incorporated	9	95,000	
ENV Services, Inc.	9	100,000	

Oversight Subcommittee has reviewed this Work Statement

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